A COMPARATIVE STUDY OF OXYTOCICS IN THE THIRD STAGE OF LABOUR

by

C. K. JAIN,* M.D.

and

Y. PINTO DO ROSARIO,** M.D.

Despite many advances in the field of obstetrics, the mismanagement of the third stage of labour continues to be an important cause of ill health, severe disability and sometimes death. This is particularly true in countries like India where many mothers are already anaemic and debilitated and where blood transfusion services are available only at few centres.

It was long recognised that any interference with the placental separation is likely to result in an abnormal third stage. Recently, the decrease in the complications of third stage of labour have been attributed to the wider judicious use of oxytocic preparations and a change from expectant conservatism to intelligent active intervention. The best effect is obtained with maximum safety when the oxytocic is given in the second stage, once the anterior shoulder has been delivered (Stallworthy, 1966).

Tocographic studies showed that the synthetic oxytocin acts more quickly than I.M. ergometrine, but its action is less sustained and delayed haemorrhage is more likely to occur (Embrey, 1961). Thus the two together can be used with advantage in Syntometrine, a stable combination of ergometrine maleate (0.5 mg) and oxytocin 5 units in 1 ml. Embrey found the onset of action of various drugs as follows: I.M. ergometrine 7 minutes, I.V. ergometrine 45 seconds, I.M. syntometrine 2½ minutes, I.M. oxtocin—2½ minutes.

The clinical advantage of oxytocics is that there is reduction in the duration of the third stage, in the blood loss and in the complications. The Brandt-Andrews method with oxytocics is also extensively practiced.

With a view to see the advantages of various oxytocics, a total of 180 cases, both primigravidae and multigravidae, were studied in women with full term pregnancies, who had normal deliveries and had no antepartum complications of labour and delivery. Instrumental deliveries and induced labours were excluded.

On admission after routine examination, the blood pressure and haemoglobin were estimated. The oxytocic when used was given at the delivery of the anterior shoulder of the baby. The time of placental expulsion was noted and duration of trird stage calculated.

The patients were divided into 4 groups of 45 patients each with 30 multigravidae and 15 primigravidae. In the control group no oxytocic or Brandt-Andrews manoeuvre was attempted. In the other groups active intervention in the form of Brandt-Andrews method was practiced.

*Registrar.

**Professor of Obst. & Gynec., Lady Hardinge Medical College and Hospital. New Delhi.

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Group I consisted of Control and Group II were those who received I.M. ergometrine while Group III had I.V. ergometrine and Group IV, I.M. syntometrine.

TABLE I

Shows the Duration of Third Stage and the Mean Blood Loss in Various Groups in Primigravidae and Multigravidae

Group	No. of cases		Blood Loss		Duration of third stage	
	Primi.	Multi.	Primi	Multi.	Primi.	Multi
I	15	30	189.2 ml.	181.4 ml.	7 min. 3 sec.	6 min. 4 sec.
II	15	30	131 ml.	152.4 ml.	5 min. 8 sec.	5 min. 3 sec.
III	15	30	106 ml.	86 ml.	2 min. 47 sec.	3 min. 5 sec.
IV	15	30	170.3 ml.	112 ml.	2 min. 57 sec.	3 min. 29 sec.

The average amount of blood loss in the control group was 181.4 ml. in multigravidae and 189.2 ml. in primigravidae. I.V. ergometrine was highly effective in reducing the blood loss to as low as 92.6 ml., irrespective of parity. Again the average duration of third stage was markedly reduced from 7 min. 3 sec. in primigravidae and 6 min. 4 sec. in multigravidae to 2 min. 47 sec. and 3 min. 5 sec., respectively (statistically significant at 5% level of significance).

I.V. ergometrine as against the I.M. route was responsible for the sizeable reduction in the blood loss by 66.4 ml. and in duration of third stage by 1 min. 58 sec. in multigravidae, while in the primigravidae, the reduction was by 25 ml. and the third stage was shortened by 2 min. 21 sec.

Irrespective of parity, I.M. syntometrine was found to have better effect on the duration of the third stage than I.M. ergometrine, the third stage lasting 3 min. 13 sec. and 5 min. 5 sec., respectively. As compared to the controls I.M. syntometrine reduced the average amount of blood loss both in multigravidae and primigravidae, but the more marked effect was found in multigravidae. In multigravidae the decrease in blood loss by 40.4 ml. was found when I.M. syntometrine was used as compared to I.M. ergometrine (statistically significant at 5% level of significance). Thus it demonstrates a distinct advantage of I.M. syntometrine over I.M. ergometrine, when either of them is combined with Brandt-Andrews manoeuvre.

Complications

Using 14 oz. (420 ml) and above to indicate postpartum haemorrhage, the incidence was 6.6% in the controls. Postpartum haemorrhage was not noticed in other groups. Manual removal of the placenta was not required in any of the control cases nor when ergometrine was used intramuscularly. However, a manual removal rate of 2.2% was encountered with I.V. ergometrine and I.M. syntometrine.

Contraction ring formed in one patient in the whole series in whom. I.V. ergometrine was administered at the delivery of the anterior shoulder, an incidence of 0.37%. In the same patient the cord broke and manual removal of placenta was resorted to.

There was no case of inversion of the uterus.

In this study among the multigravidae in the control group there was no change in the systolic blood pressure in 60% and

in the diastolic blood pressure in 66.6%. Mild elevation in systolic blood pressure was noted in 16.6% and moderate elevation in 6.6% of cases. Ergometrine used intravenously produced a moderate rise in systolic blood pressure in 43.3% and a marked elevation in 10% of multigravidae. With I.M. syntometrine, 23.3% showed a severe degree of rise in systolic blood pressure. Other side effects noted were severe pain in the lower abdomen, headache, chills and rigors. The effects were more marked with I.V. ergometrine.

Discussion

The duration of third stage is an important factor, as it influences the amount of blood loss. The longer the third stage the greater is the blood loss as agreed by Adair (1935), Kamperman (1941) Davis and Boynton (1942), Bose (1955), Fliegner and Hibbard (1966) and Mathia (1967). Thus, prolonged waiting for spontaneous placental separation and allowing the patient to bleed slowly is not justified, particularly for those who are anaemic. Any management, therefore, which reduces the duration of the third stage should have an effect in reducing the blood loss. This is the reason for the successful use of oxytocics given before the separation and expulsion of the placenta.

Mathia (1967) found a considerable difference in the blood losses in the third stage. When the third stage lasted 8 minutes the blood loss was 186 ml. and dropped to 100 ml. when the third stage was only 3 minutes. This was also observed in the present study, where in primigravidae of control group, the blood loss was 189.2 ml. when the third stage lasted 7 min. 3 sec. and when the duration of third stage was reduced to 2 min. 47 sec. with I.V. ergometrine the blood loss dropped to 106 ml. only.

Chukudebelu *et al* (1963), Kemp (1963), McGrath and Browne (1962) report a greater reduction in the duration of the third stage with I.M. syntometrine than I.M. ergometrine. Similar observation is made in the present study. The efficacy of syntometrine is probably due to the initial effect produced by the syntocinon contained in it, while the ergometrine fraction acts independently later.

The time of administration is also important. Stallworthy and Bourne (1966) advocate the administration of an oxytocic with the delivery of the anterior shoulder. According to them the increased bleeding with I.M. ergometrine lies in the time lag of 7 minutes between its injection and action as compared with 2½ minutes with syntometrine.

Thus, it has been concluded that the third stage is quickly completed in great majority of cases when it is actively managed with oxytocics and Brandt-Andrews method.

Conclusion

A definite shortening of the third stage of labour from 6 minutes 33 seconds to 2 minutes 56 seconds was found when I.V. ergometrine was used in combination with active intervention, while the average duration of the third stage with I.M. syntometrine was 3 minutes 13 seconds.

I.V. ergometrine alongwith active intervention has been found highly effective in reducing the blood loss to as low as 92.6 ml. from 185.3 ml.. irrespective of parity. I.M. syntometrine was also effective in reducing the blood loss in the third stage of labour, but it is less effective than I.V. ergometrine and better than I.M. ergometrine.

Though I.V. ergometrine with Brandt-Adrews method proved to be the most

effective combination in the management of the third stage with regard to blood loss and duration of third stage of labour, it carried the potential danger of certain side effects like, hypertension, nausea, vomiting and severe pain in the lower abdomen, and increased risk of retention of the placenta necessitating manual removal. Moreover, the I.V. injection requires a trained hand and in the untrained hands it may become difficult and even dangerous. The one advantage with it was that patients given I.V. ergometrine did not require another injection of oxytocic in the postpartum period. I.M. ergometrine though a safe and easy method, takes a longer time to act.

I.M. syntometrine given at the delivery of the anterior shoulder and combined with active management of the third stage of labour seems to be the method of choice for an uncomplicated safe, short third stage of labour.

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